

REMARKS

Claims 2, 3, 8-10, 12, 14, 17-22 are currently under examination, of which claims 19 and 21 are independent claims. In view of the following Remarks, Applicants respectfully request reconsideration and timely withdrawal of the pending rejections for the reasons discussed below.

Rejections Under 35 U.S.C. §102/§103

Claims 2, 3, 8-12, 14, and 17-22 stand rejected under 35 U.S.C. §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 6,655,633 to Chapman, Jr. ("Chapman"). Applicants respectfully traverse this rejection for at least the following reasons.

Independent claims 19 and 21 are both include an integral extruded multi-void core with claim 19 having a micro-multi void core, metal matrix composite tape on surfaces of the multi-void core, and aluminum oxide reinforcing fibers within the metal matrix composite tape. Chapman does not disclose 1) the width of the channel, 2) the extruded tubular core, 3) metal matrix composite tape on the surfaces of a multi-void core, and 4) aluminum oxide reinforcing fibers. Chapman may filament wind fibers around a structure, but does not disclose utilizing metal matrix composite tape applied to a surface of a core. Applicant submits for at least these reasons, Chapman does not anticipate claims 19 and 21 and all the claims that depend therefrom.

With respect to obviousness, there are at least four elements of claims 19 and 21 are missing from Chapman. These are the width of the channels, the extruded integral core, metal matrix composite tape on the surface of the core, and aluminum oxide reinforcing fibers. The Examiner has not considered the extruded integral core as a structural element indicating that it is a product-by-process limitation. Applicant disagrees. What is claimed in claims 19 and 21 is

that the core is an integral extruded multi-void core. By having an integral extruded multi-void core is a tube in which there are no seams or joints within the core. This is structurally different from a core that set tubes next to one another to provide a multi-void core. Setting tubes next to one another provides joints, seams and other structural artifacts that are not present in the integral core claimed in claims 19 and 21. Further, there is no disclosure, reference or teaching of the metal matrix composite tape applied to the surfaces of a core material.

Applicant submits that combination of element in claims 19 and 21 that include an integral extruded multi-void core, metal matrix composite tape on the surfaces of the core, and aluminum oxide reinforcing fibers are not disclosed, taught or suggested in Chapman. Accordingly, for at least these reason, Applicant respectfully submits that claims 19 and 21 and all the claims that depend therefrom are not obvious over Chapman.

Rejections Under 35 U.S.C. §103

Claims 2, 10, 11, 19 and 20 stand rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 5,407,727 to Newell (“Newell”). Applicants respectfully traverse this rejection and request reconsideration for at least the following reasons. Claims 19 and 21 are directed to a integral multi-void core in which metal matrix composite tape is positioned on surfaces of the core and the metal matrix composite tap has aluminum oxide as a reinforcing fiber.

The rejection takes the position that it would be obvious to substitute the carbon coated alumina hollow fibers for the carbon coated silicon carbide hollow fiber because silicon carbide and alumina have been shown in the art to be recognized equivalent ceramic hollow fibers for structural components. Carbon coated alumina hollow fibers and carbon coated silicon carbide hollow fibers are not elements of claims 19 and 21.

Alumina fibers are not used in the invention of Newell. Newell specifically states, “[f]iber materials which are acceptable for use in the present invention include silicon carbide materials . . . and SIGMA type fibers” Column 3, lines 6-10. Newell discloses using hollow silicon carbide fibers in a metal matrix for the invention. (Column 3, line 17 – Column 4, line 35.) Newell does not disclose using alumina fibers with the invention and does not teach how alumina type fiber would be utilized to obtain hollow core fiber materials suitable for use in the invention. Using a solid alumina fiber would defeat the stated objectives in Newell of using hollow core fibers to allow gases and fluids to pass through the core of the fibers. Further, Newell does not disclose a core having two planar surfaces and including a plurality of continuous, parallel, longitudinal channels. Newell appears to disclose a honeycomb type structure with holes between honeycomb cells. This configuration would not be a core having two planar surfaces and including a plurality of continuous, parallel, longitudinal channels.

Therefore, Applicant submits that claims 19 and 21 as well as all the claims that depend therefrom are not obvious over Newell.

Claims 2, 10, 14, and 19-22 stand rejected under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 6,630,093 to Jones et al. (“Jones”) in view of U.S. Patent No. 5,968,671 to Joseph (“Joseph”). Applicants respectfully traverse this rejection and request reconsideration for at least the following reasons. As will be discussed below this combination at a minimum fails to disclose or teach an extruded multi-void core as required by independent claims 19 and 21.

Claims 19 and 21 are directed to structural composite sandwich in which the multi-void core is an extruded integral core. As discussed above, an extruded integral core is not simply a

product-by process limitation. An extruded integral indicates that the core is of unitary construction without seam, gaps, or joints between the voids.

Jones does not disclose teach or suggest a composite structural composite sandwich comprising an extruded integral multi-void core having two planar surfaces and *including* a plurality of continuous, parallel, longitudinal channels, and at least one layer of a composite stiffening material attached to each of said two planar surfaces, wherein said composite stiffening material comprises a continuous fiber metal matrix composite tape, comprising continuous aluminum oxide fibers as claimed in claim 19. Further, Jones fails to disclose teach or suggest a structural composite sandwich comprising an extruded integral multi-void core having two opposing planar surfaces and between said opposing planar surfaces a plurality of longitudinal, continuous parallel channels or voids defined by ribs extending between said opposing planar surfaces, and at least one layer of a composite stiffening material attached to each of said two planar surfaces, wherein said composite stiffening material comprises a continuous fiber metal matrix composite tape, comprising continuous aluminum oxide fibers as described in claim 21. Some particular features Jones fails to disclose are the integral extruded micro multi-void core (claim 19), the extruded integral multi-void core (claim 21), and metal matrix composite tapes comprising continuous aluminum oxide fibers.

The rejection takes the position that the term extrusion is a product-by-process limitation. What is claimed in claims 19 and 20 is that the core is an integral extruded multi-void core. By having an integral extruded multi-void core there are no seams or joints within the core. Jones does not teach, or disclose this feature.

Combining Jones with Joseph fails to supply the missing limitations. Joseph does not disclose teach or suggest an extruded micro multi-void core (claim 19) or the extruded integral multi-void core (claim 21). Therefore at a minimum the combination of Jones in view of Joseph fails to provide an extruded micro multi-void core (claim 19) or the extruded integral multi-void core (claim 21). Since the combination still fails to provide all the features of claims 19 and 21, Applicant respectfully submits that independent claims 19 and 21 and all the claims that depend therefrom are not obvious over Jones in view of Joseph.

Claims 3, 8, 9, 12, 17, and 18 stand rejected under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 6,630,093 to Jones et al. ("Jones") in view of U.S. Patent No. 5,968,671 to Joseph ("Joseph"), further in view of Gunnink. Applicants respectfully traverse this rejection and request reconsideration for at least the following reasons. All of these claims depend from claim 19. As discussed above, the combination of Jones in view of Joseph does not disclose teach or suggest all the features of claim 19 including an integral extruded multi-void core. Similarly, Gunnink does not disclose teach or suggest an integral extruded multi-void core. Accordingly, the combination of Jones in view of Joseph in further view of Gunnink still fails to provide all the limitations of claims 19. Further, the additional features of claims 3, 8, 9, 12, 17, and 18 and the features of claim 19 provide a combination of features that are not present in Jones in view of Joseph in further view of Gunnink. Applicant respectfully submits that independent claims 3, 8, 9, 12, 17, and 18 are not obvious over Jones in view of Joseph further in view of Gunnink.

Double Patenting

Claims 3, 5, 8-10, 12, 14, 17-22 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over copending Application No. 11/000,521. Application No. 11/000,521 is commonly owned with the present application. Accordingly, Applicants respectfully request that this rejection be held in abeyance until the allowance of currently pending claims.

Extension of Time

A Petition for a three (3)-month extension of time under 37 C.F.R. §1.136(a) is filed herewith. It is not believed that any further extensions of time are required other than those in the accompanying Petition. If extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned for under 37 C.F.R. §1.136(a). Applicant believes that no further fees for net addition of claims are required at this time. Any fees required for extensions of time and any fees for the net addition of claims are hereby authorized to be charged to our Deposit Account No. 50331.

Conclusion

Applicants believe that a full and complete response has been made to the pending Office Action and respectfully submit that all of the stated objections and grounds for rejection have been overcome or rendered moot. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact the Applicant's

undersigned representative at the number below to expedite prosecution. Prompt and favorable consideration of this Reply is respectfully requested.

Respectfully submitted,



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